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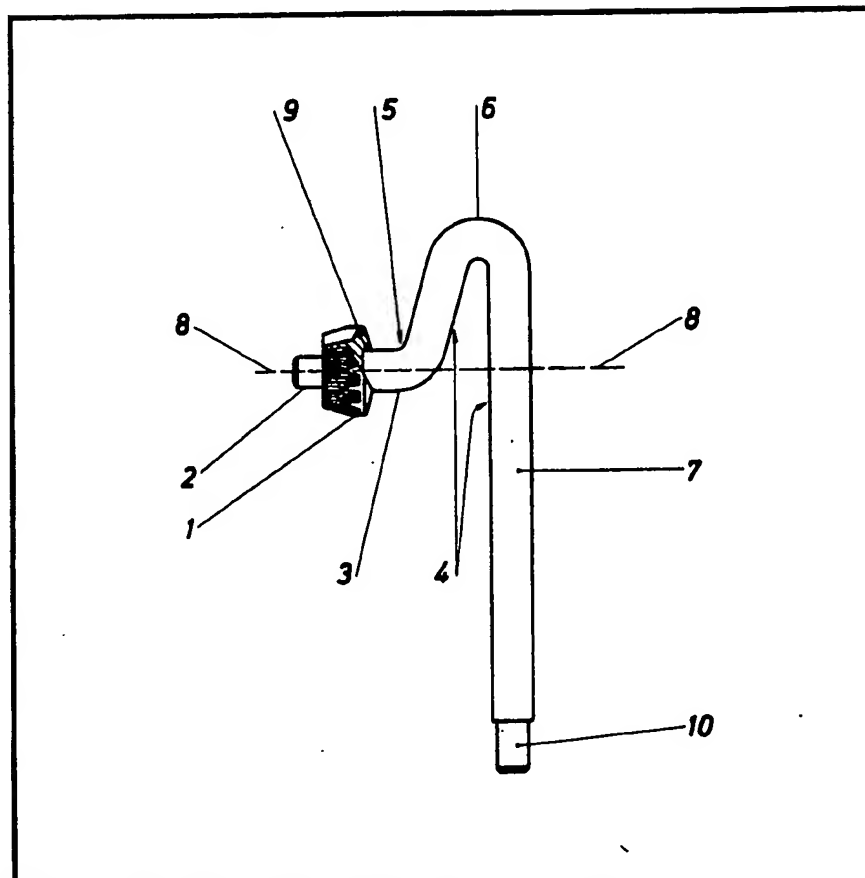
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(54) Key for a drilling chuck

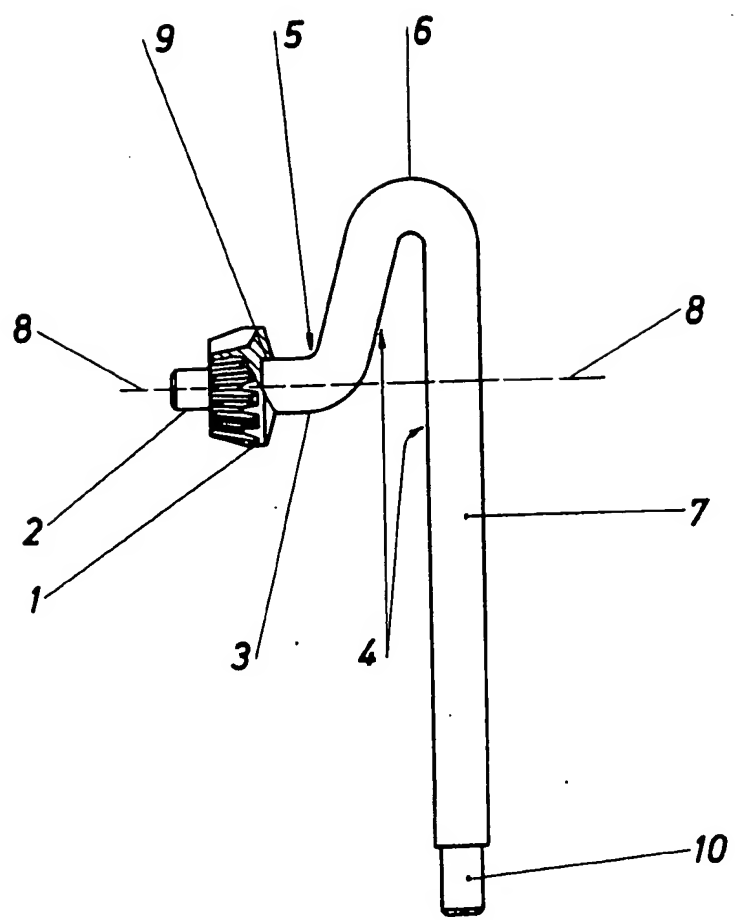
(57) A key for a drilling chuck is produced in a simple and inexpensive manner by flow-pressing and hardening a pinion 1 with a guide pin 2 from high-grade steel and butt welding a shank 3 with an integral tommy bar 4 in a recess 9 in the pinion 1. The free end 10 of the bar 4 fits the same radial bore in the chuck as the pin 2. Thus, the same key can be used both for tightening the chuck and for mounting the chuck in a machine.



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## SPECIFICATION

### Key for a drilling chuck

- 5 The invention relates to a key for a drilling chuck, comprising a pinion which for the most part is of a tapered configuration, and a tommy bar which extends transversely with respect to a pinion shank, wherein the tommy bar is formed integrally with the pinion shank, is bent away from the pinion shank, and is bent back, forming a hook, with a straight bar portion extending over the axis of the pinion shank.
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- 15 Drilling chucks which have a clamping sleeve which is rotatable about the axis of the chuck body and whose end surface is provided with a tooth arrangement are tightened and released by tightening keys which have a pinion which engages into the teeth of the clamping sleeve and which is of a correspondingly tapered configuration; the pinion has a guide pin portion which, when the key is fitted to the drilling chuck, is received by a radial bore in the chuck body. The key has a tommy bar which extends transversely with respect to the pinion shank, for the purposes of actuating the key by hand, in which respect, as a result of the hook-like bent configuration, the tommy bar extends on both sides of the axis of the pinion so that the hand which applies a force to the straight bar portion on both sides of the axis of the pinion can apply to the key a torque force which is symmetrical with respect to the axis of the pinion. This excludes the danger of the key slipping off the drilling chuck when the key is operated with even only a certain amount of skill.
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- 40 The known keys of this kind are produced as an integral component with regard to their pinion, the guide pin portion, the pinion shank and the straight bar portion which forms the tommy bar. This gives rise to difficulties from the point of view of the production process, particularly when the tommy bar is required to project considerably beyond the axis of the pinion one or both sides, so that a higher torque force can be applied, using the same manual force.
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The invention is based on the problem of so designing a key for drilling chucks, of the above-indicated kind, that, whatever the length of the tommy bar, the key can be produced in a simple and inexpensive manner, but nonetheless, satisfies all requirements in respect of quality.

According to the invention, a drilling chuck comprises: a pinion which for the most part is of a tapered configuration and is provided with a coaxial pinion shank, and a tommy bar which is integral with the pinion shank and extends transversely with respect to the pinion axis, the tommy bar being formed by being bent transversely to the shank and then bent

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back, forming a hook configuration, with a straight bar portion extending over the axis of the pinion shank, the pinion being a hardened, flow-pressed component of high-grade steel which has a coaxial blind cylindrical recess into which the pinion shank is butt welded, and the pinion shank being of lower quality soft steel.

- The advance achieved by the invention is essentially that the pinion with its guide pin portion on the one hand and the pinion shank with the tommy bar on the other hand can be produced separately and these two components of the key can only subsequently be assembled. Production of the component forming the pinion shank and the tommy bar, being independent of the pinion, makes it possible for the straight bar portion of the tommy bar to be formed so as to project substantially on both sides of the axis of the key, and in particular to extend so that its free end is far beyond the axis of the key enabling correspondingly high torque forces to be applied by hand. The separate pre-production of both components of the key makes it possible for the pinion with its guide pin portion, which can be subjected to higher loadings than the tommy bar, to be made from a higher-grade material than the shank of the key and the tommy bar, and for only the pinion with its guide pin portion to be hardened. In all therefore, this also results in a substantial simplification in manufacture and a corresponding reduction in cost.
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- 100 A preferred embodiment is characterised in that the free end of the tommy bar, which projects far beyond the axis of the pinion, is provided with key surfaces or is of a cylindrical configuration of a diameter which is substantially the same as the diameter of the guide pin portion which is provided on the side of the pinion which is remote from the pinion shank. In that case, because of its greater distance from the axis of the key, the end of the tommy bar can in turn serve as a key insert for loosening the drilling chuck on the machine shaft by means of the key for example when a change of chuck is to be effected, or tightening the replacement chuck on the machine shaft.
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An example of the invention is described hereinafter with reference to an embodiment illustrated in the drawing, in which the single figure shows a side view in partial cross-section of a key according to the invention.

In the key shown in the drawing, for a drilling chuck, a tapered pinion is denoted by reference numeral 1, a guide pin portion thereof is denoted by reference numeral 2 and a pinion shank is denoted by reference numeral 3. Connected to the pinion shank 3 is a tommy bar which extends substantially transversely thereto and which is generally indicated in the drawing by reference numeral 4. The tommy bar 4 is formed integrally with the

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pinion shank 3 and is firstly bent away from the pinion shank 3 at the position indicated by reference numeral 5, and then, at the position indicated by reference numeral 6, forming a hook configuration, it is bent back with a straight bar portion 7 extending over the axis 8 of the pinion shank 3, the hook bend 6 being disposed in the plane defined by the pinion shank 3 on the one hand and the straight bar portion 7 of the tommy bar 4 on the other hand. Therefore, the straight bar portion 7 of the tommy bar 4 extends on both sides of the axis 8 of the shank 3. The pinion 1 with the guide pin portion 2 is an integrally produced, hardened flow-pressed component comprising high-grade steel, which has a coaxial blind cylindrical recess 9. The pinion shank 3 which comprises lower-quality mild steel is butt welded into the recess 9. The free end 10 of the tommy bar 4 projects laterally far beyond the axis 8 of the pinion and, in the embodiment illustrated, is of a cylindrical configuration of a diameter which is substantially the same as the diameter of the guide pin portion 2. The end 10 of the tommy bar 4, like the guide pin portion 2, therefore fits into the radial bore which is primarily provided in the drilling chuck body for receiving the guide pin portion 2. Therefore, the end 10 of the tommy bar 4 when inserted into the bore in the drilling chuck, serves as a key that can be used for slackening or tightening the drilling chuck on the drive shaft of the drilling machine, if for example the chuck is to be replaced. As a result, there is no need for different keys for the chuck tightening operation on the one hand, and the operation of mounting the drilling chuck on the drilling machine on the other hand.

40 In an alternative embodiment, the end 10 is formed with key surfaces for co-operating with a corresponding aperture in the drilling chuck.

#### CLAIMS

- 45 1. A key for a drilling chuck comprising a pinion which for the most part is of a tapered configuration and is provided with a coaxial pinion shank, and a tommy bar which is integral with the pinion shank and extends transversely with respect to the pinion axis, the tommy bar being formed by being bent transversely to the shank and then bent back, forming a hook configuration, with a straight bar portion extending over the axis of the pinion shank, the pinion being a hardened flow-pressed component of high-grade steel which has a coaxial blind cylindrical recess into which the pinion shank is butt welded, and the pinion shank being of lower-quality soft steel.
- 60 2. A key according to Claim 1, in which the pinion is formed on the side thereof remote from the pinion shank with a coaxial guide pin portion for insertion into a radial bore of a drilling chuck, and the free end of

the straight bar portion of the tommy bar is provided with a cylindrical configuration of a diameter which is substantially the same as the diameter of the guide pin portion.

- 70 3. A key according to Claim 1, in which the free end of the straight bar portion of the tommy bar is provided with key surfaces.

4. A key for a drilling chuck, the key being substantially as hereinbefore described with reference to the accompanying drawing.

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